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RESTRICTED

RESTRICTED
SECURITY INFORMATION

NORTH AMERICAN AVIATION INC

FLIGHT TEST PROGRESS REPORT NO. 19

FOR

WEEK ENDING FEBRUARY 29, 1953

FOR

MODEL F-86F AIRPLANE

NAA MODEL NO. NA-191

CONTRACT AF33(600)-6517

RESTRICTED
SECURITY INFORMATION

File No. _____ RESTRICTED SECURITY INFORMATION Report No. NA-53-131-19

NORTH AMERICAN AVIATION, INC.

INTERNATIONAL AIRPORT

LOS ANGELES 45, CALIFORNIA

ENGINEERING DEPARTMENT

FLIGHT TEST PROGRESS REPORT NO. 19

FOR

WEEK ENDING FEBRUARY 27, 1953

FOR

MODEL F-86F AIRPLANE

NAA MODEL NO. NA-191

CONTRACT AF33(600)-6517

PREPARED BY
Technical Section

APPROVED BY
E. J. Horkey

No. of Pages 23

REVISIONS

Date 3-5-53

DATE	REV. BY	PAGES AFFECTED	REMARKS

TABLE OF CONTENTS

I INDEX OF FIGURES

II

SUMMARY

ACTIVITIES

Flights accomplished during the period covered by this report are listed under Section III, "Summary of Flights".

Current Flights

Date	Airplane	Flight	Purpose
3-2-53	50-579	559	Bomb Drops
	51-2718	203	Formation Flight with 50-579
	51-2884	1	Functional (Air Restarts)
		2	Functional (Air Restarts)
	52-4385	70	Napalm Drops
3-3-53	50-579	560	MPC Unit Evaluation
	52-4305	94	Stability Data with 6-3 Leading Edge and External Stores
	52-4385	71	Formation Flight with 50-579
3-4-53	50-579	561	Increased Area Speed Brake Evaluation
		562	Fighter Bomber Evaluation with Increased Speed Brakes
		563	Fighter Bomber Evaluation with Increased Speed Brakes
	51-2884	3	Gunfiring
		4	Gunfiring
	52-4305	95	Longitudinal Stability with 6-3 Leading Edge & External Store
		96	Longitudinal Stability with 6-3 Leading Edge & External Store
		97	Longitudinal Stability with 6-3 Leading Edge & External Store
	52-4385	72	Rocket Firing with MPC
		73	Rocket Firing with MPC

Production Flights

During the past weekly interval (through 28 February 1953) 46 flights were conducted on F-86F production airplanes for a total flight time of 38 hours 10 minutes. F-86F airplanes Nos. 52-4562, 4572, 4574, 4575, 4576, 4577, 4578, 4579, 4580, 4581, 4582, 4583, 4584, 4586, 4587, 4589, 4591, and 4592 were accepted by the Air Force making a total of 423 F-86F's accepted to date.

II

SUMMARY

120 Gallon Drop Tank Jettison Tests (B.P. 118)

As a result of the drop test program conducted by the contractor to improve the jettisoning characteristics of the 120 gallon tanks, a modified fin (IV-A) has been developed that has proved satisfactory in all conditions except when the tank is dropped empty at high speed in the presence of another store. To remedy this condition a guide vane was introduced as shown in figure to be used in conjunction with the IV-A fins.

Fighter Bomber Evaluation

Results of the development program conducted by the Contractor to improve the F-86 series aircraft for ground support capability are presented herein. Modification of the side speed brakes and the addition of belly brake appreciably decrease the dive end speed.

III

SUMMARY OF FLIGHTS AND DATA OBTAINED

FLT NO	DATE	PILOT	TAKE-OFF C.G.(% MAC) AND GROSS WT (LBS)	PURPOSE OF FLIGHT
			F-86E Airplane No. 50-579	
552	2-25-53	Welch	16,430/25.6	Speed Brake Evaluation
553	2-25-53	Welch	16,430/25.6	Speed Brake Evaluation
554	2-26-53	Welch	16,422/25.3	External Stores Evaluation
555	2-27-53	Welch	16,422/25.3	Dive Bombing with Belly Brakes
556	2-27-53	Welch	16,422/25.3	Dive Bombing with Belly Brakes
557	2-27-53	Welch	16,430/25.6	Speed Brake Evaluation
558	2-27-53	Hoover	15,376/24.3	Longitudinal Control with 6-3 Leading Edge and External Stores
			F-86F Airplane No. 51-2928	
90	2-24-53	Morris	14,783/21.8	Compressor Stall Investigation
91	2-25-53	Morris	20,600/23.2	Formation Flight with 52-4305
			F-86F Airplane No. 52-4305	
90	2-24-53	Welch	17,31[illegible]/25.5	Ferry to Los Angeles (Aborted)
91	2-25-53	Hoover	20,600/23.2	6-3 Leading Edge with External Store
92	2-26-53	Hoover	18,178/24.6	Formation with 6-3 Leading Edge with External Stores (Aborted)
93	2-27-53	Hoover	15,578/24.2	Formation with 6-3 Leading Edge and External Stores, and Ferry to Los Angeles

III

SUMMARY OF FLIGHTS AND DATA OBTAINED

FLT NO	DATE	PILOT	TAKE-OFF C.G. (% MAC) AND GROSS WT (LBS)	PURPOSE OF FLIGHT
			F-86F Airplane No. 52-4385	
66	2-24-53	Welch	15,362/20.6	Ferry to Los Angeles (Aborted)
67	2-26-53	Darnell	18,157/23.6	Ferry to Edwards
68	2-27-53	Baker	15,458/24.2	Formation Flight with 52-4305
69	2-27-53	Baker	15,458/24.2	Napalm Drops

Total Accumulated Time

Airplane	Time	Engine No.	Time
50-579	324:40	042-719	65:40
51-2928	49:45	007-123	49:45
52-4305	50:35	008-168	24:15
52-4385	44:30	007-902	44:30

IV

DISCUSSION

120 GALLON DROP TANK JETTISON TESTS (B.P. 118)

As reported in past progress reports and letters, drop tests were being conducted with 120 gallon tanks installed at B.P. 118 for the purpose of developing a fin that would give more satisfactory jettisoning characteristics to these tanks. The results of these tests have led to the development of a modified fin (IV-A), Figures 1, 2 and 5, which has proven satisfactory in all conditions except when dropped empty at high speed in the presence of another store. Many variations of the tank fins were tested during the attempts to solve this unsatisfactory condition. However, no satisfactory solution could be found by modification of the fins alone.

At this time a guide vane was introduced as shown in Figures 3 and 4, to be used in conjunction with the modified (IV-A) fins. This configuration arrangement proved successful in eliminating the unsatisfactory high speed tank empty drop condition, namely; tank pylon striking the napalm or rockets as the tank rolls and rotates inboard while moving aft during the jettisoning sequence.

Since the guide vane is attached to the wing (front rocket mounting hole B.P. 116.7) and does not release with the tank, it can be readily seen that it prevents roll and rotation inboard until the tank has dropped down 7 1/2 inches. This distance is sufficient to allow the tank and pylon to clear the inboard store. At low speed (220 kn) the vane has little effect on the tank dropping characteristics.

These guide vanes are not a jettisonable item, and remain with the airplane throughout the flight. Consequently, it is recommended that they only be used with dual store (fighter-bomber) configurations. Although these vanes will contribute negligible drag, if any, there is no advantage having them on when not needed. In addition, it is suggested that they be used only with the 120 gallon tanks, on the 200 gallon tanks the guide vane is not necessary.

These tanks have yet to be drop tested with the 6-3 in. wing leading edge installed. These tests are planned for the near future. However, in the meantime, the noted 120 gallon tank configuration is recommended as satisfactory for use on all single or dual store F-86E and F airplanes having the slatted leading edge.

IV

DISCUSSION

Fighter-Bomber Evaluation

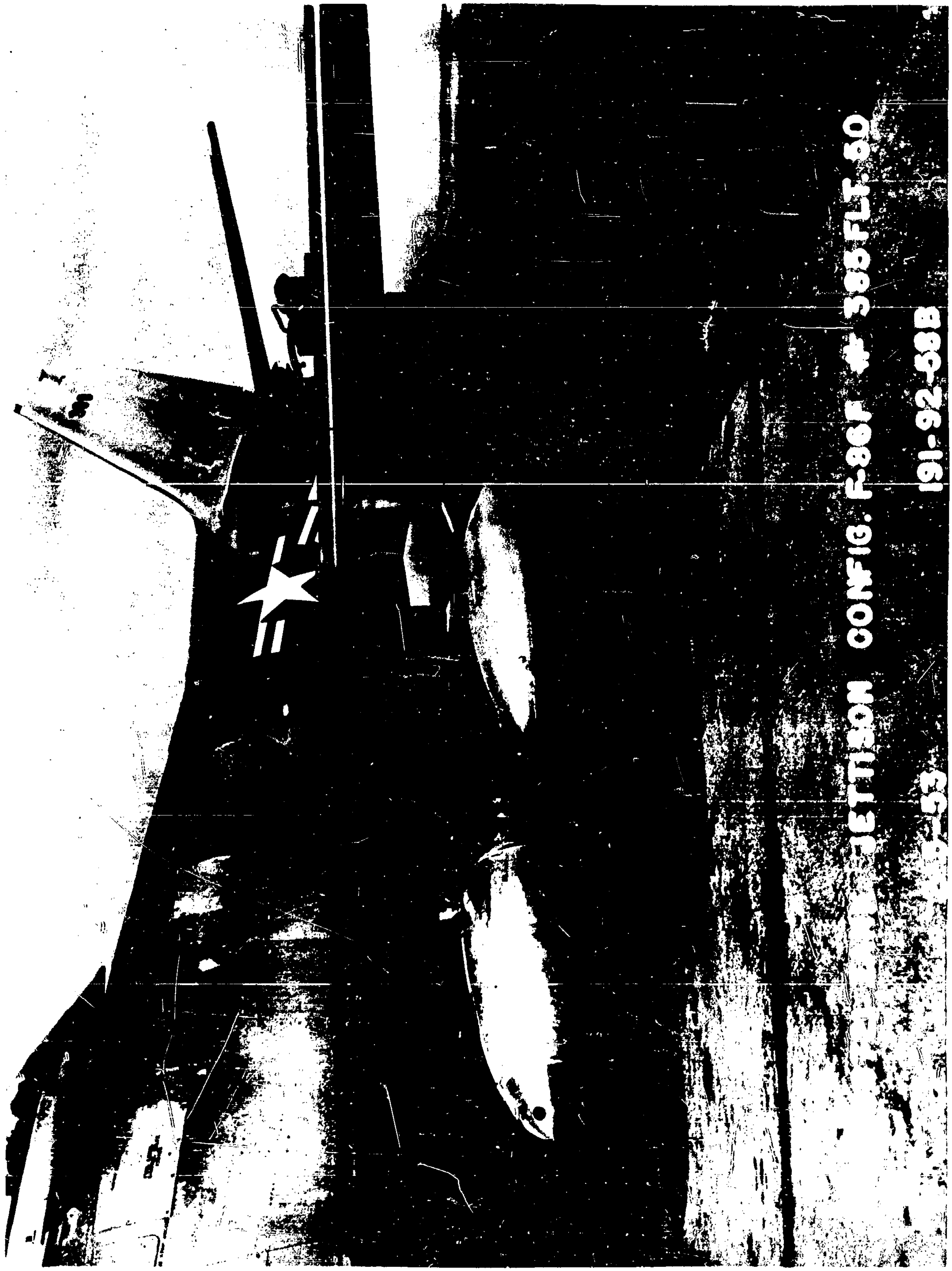
The development program carried on by the contractor to improve the effectiveness of the F-86 series aircraft for ground support applications has progressed favorably and data obtained to date is presented in this report.

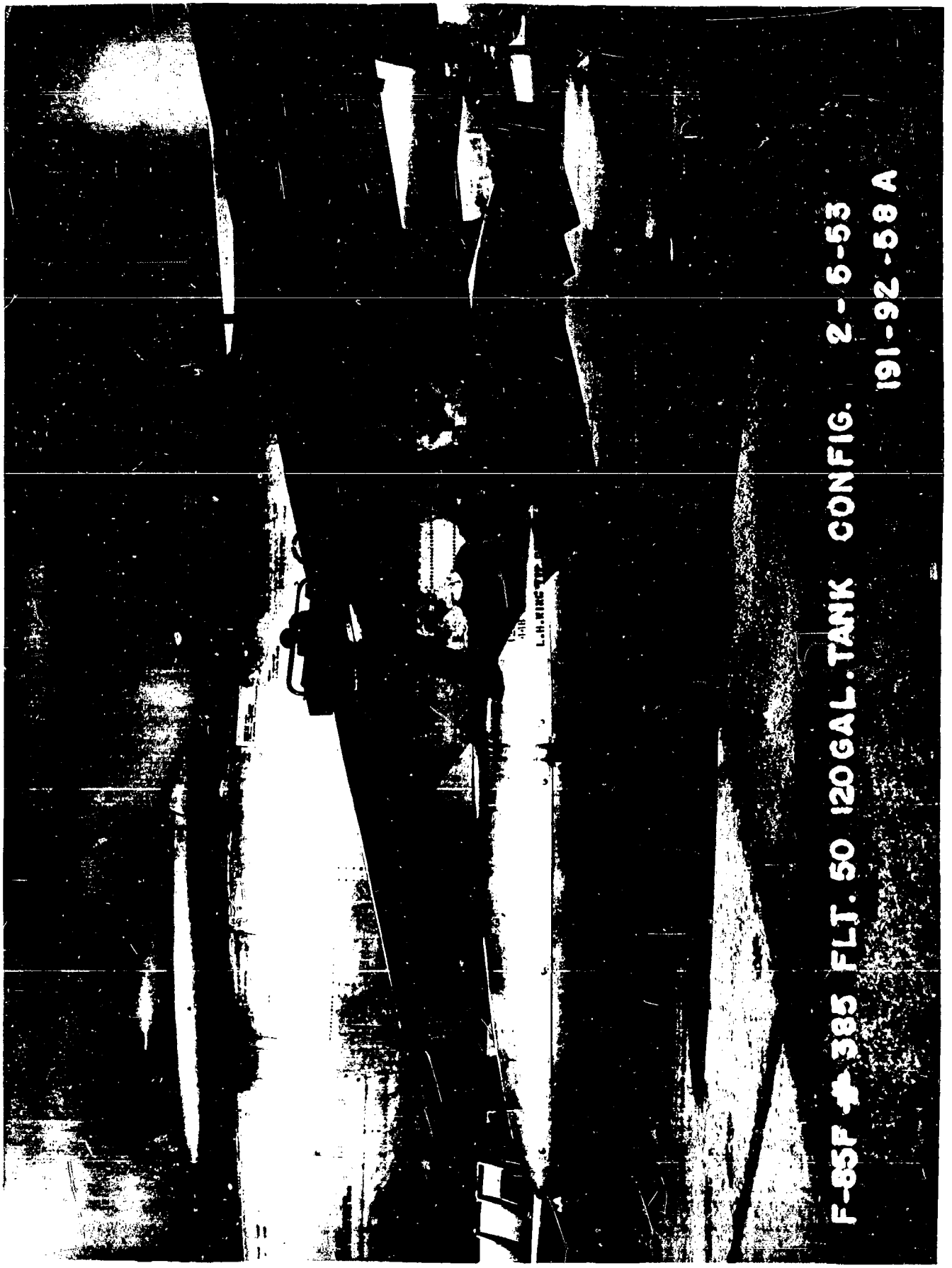
Time histories of dives have been recorded and plotted and are presented on pages 16 through 28 . Pages 12 through 15 present plots of speed and dive angle versus altitude and show the effect of various brake configurations on the dive speed.

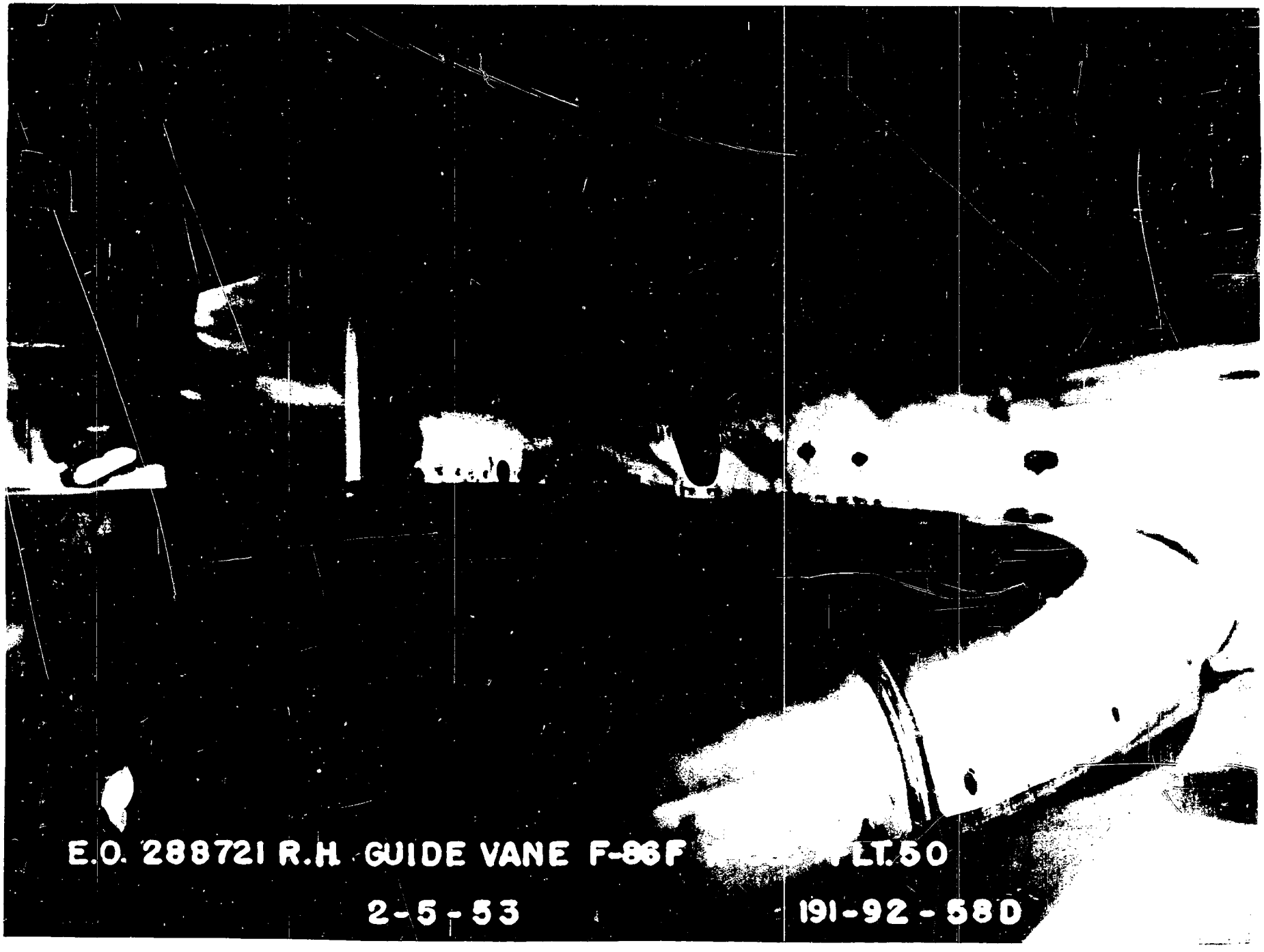
It is to be noted that the speed reduction obtained with the belly brakes is very sizable as shown on pages 12 through 15 while the speed reduction obtained by enlarging the side speed brakes is insufficient to warrant the weight and c.g. penalty incurred. It is shown by these enclosures that the major contribution to the speed reduction is obtained by the addition of the belly brakes, and that when both the belly brakes and side brakes are open the enlargement of the side brakes give only a minor reduction in speed.

The primary purpose for increasing brake area was to decrease dive speed and to increase the tracking time. It is the opinion of the contractor that this purpose is accomplished by the addition of the belly brakes to the standard side brakes and that a further increase in brake area affords no tactical advantage or improvement in accuracy.

FIG. NO. 1




F-86F 385 FLT. 50 120 GAL. TANK CONFIG. 2-6-53
191-92-58 A



PAGE NO. 9
FIG. NO. 3

FIGURE 4

PREPARED BY AES

CHECKED BY RDW

DATE 3-5-53

NORTH AMERICAN AVIATION, INC.

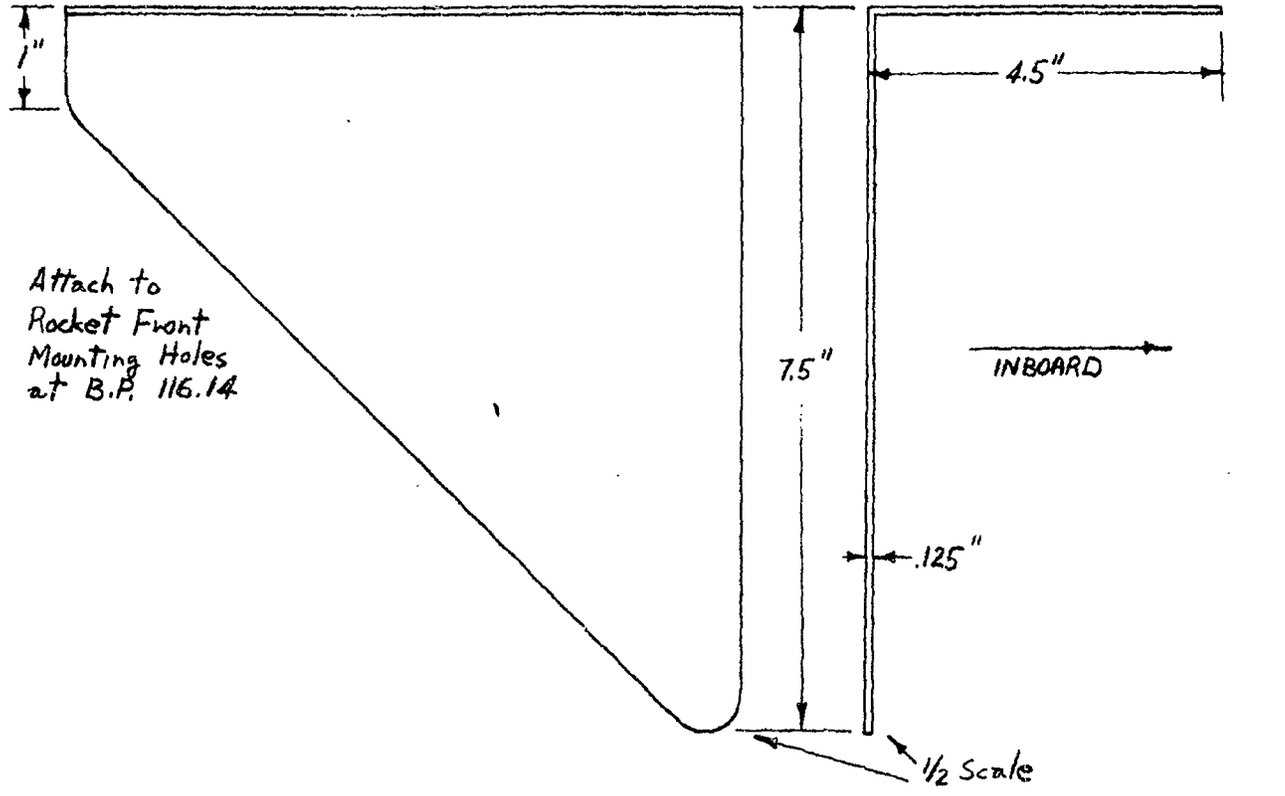
INTERNATIONAL AIRPORT LOS ANGELES 45, CALIFORNIA

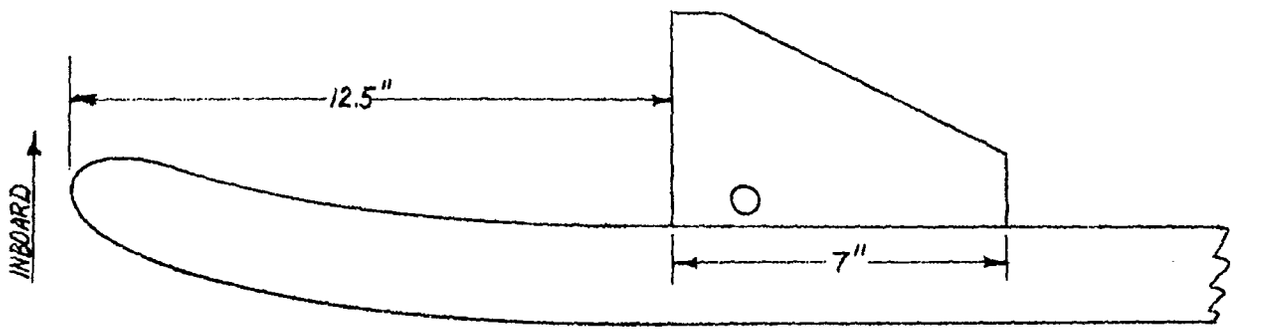
PAGE NO. 10 OF 28

REPORT NO. NA-53-131-19

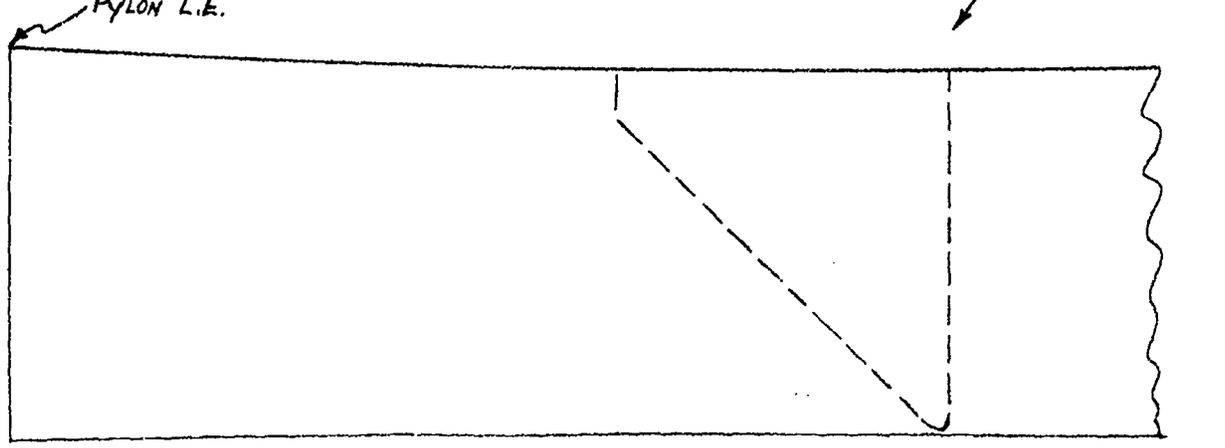
MODEL NO. F-86F

120 GAL TANK PYLON GUIDE VANE





1/4 Scale



120 GAL. TANK MOD. IV-A

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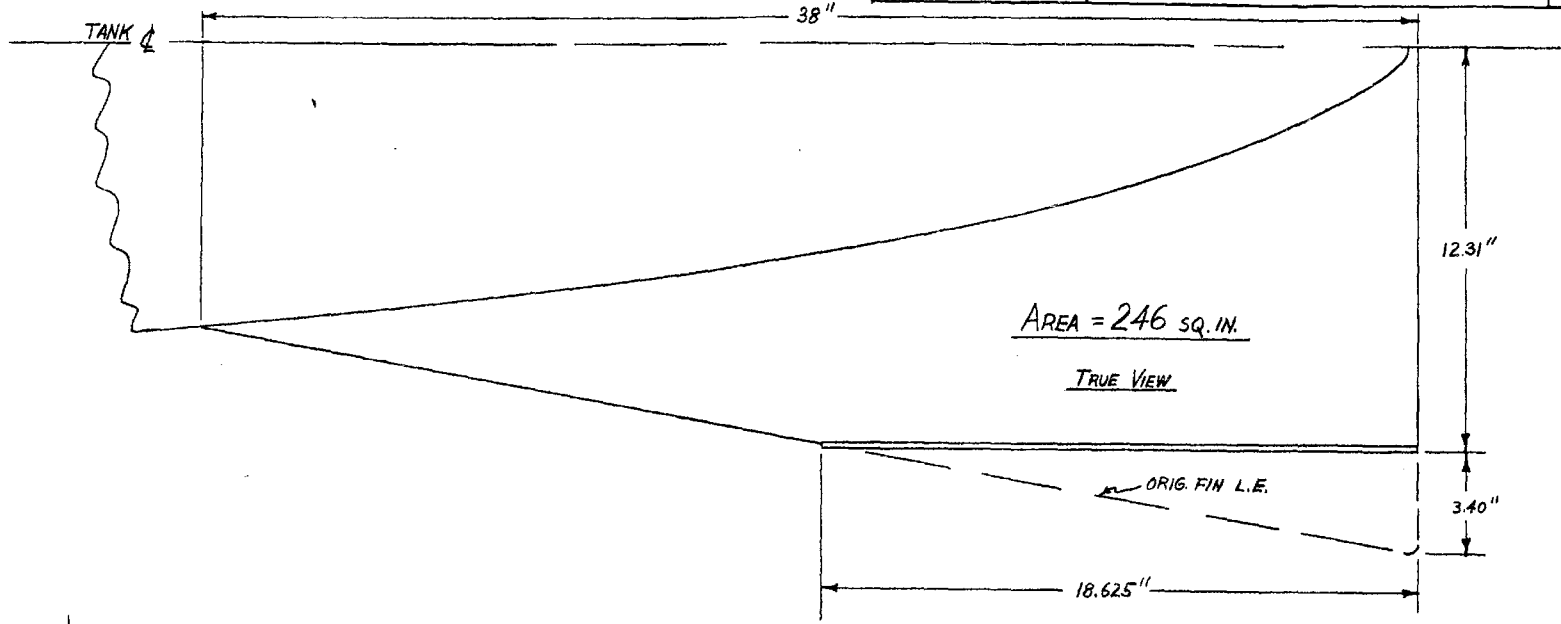
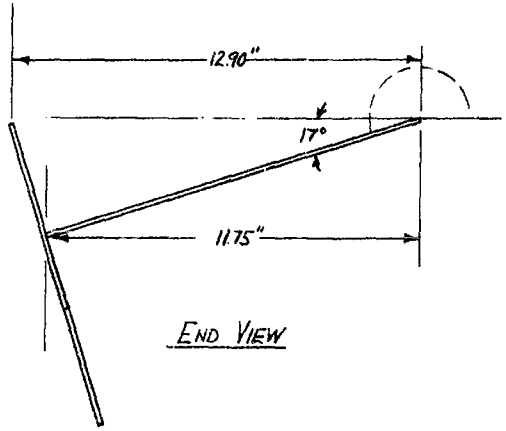
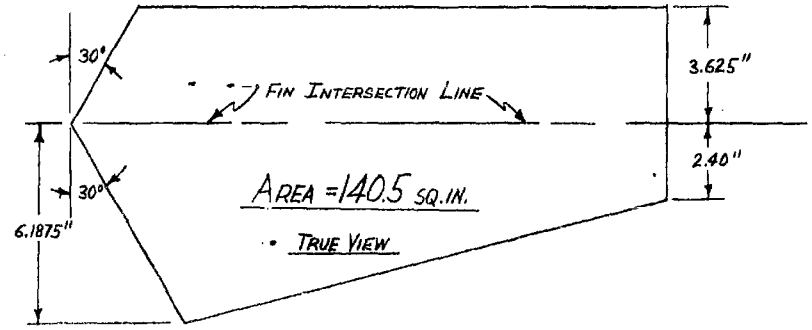
CHECKED BY: RDW	LOS ANGELES AIRPORT LOS ANGELES 45 CALIFORNIA	REPORT NO NA-53-131-19
DATE: 3-5-53	FIN MODIFICATION	MODEL NO F-86F

FIG. 5







1/4 Scale

FORM ED-214

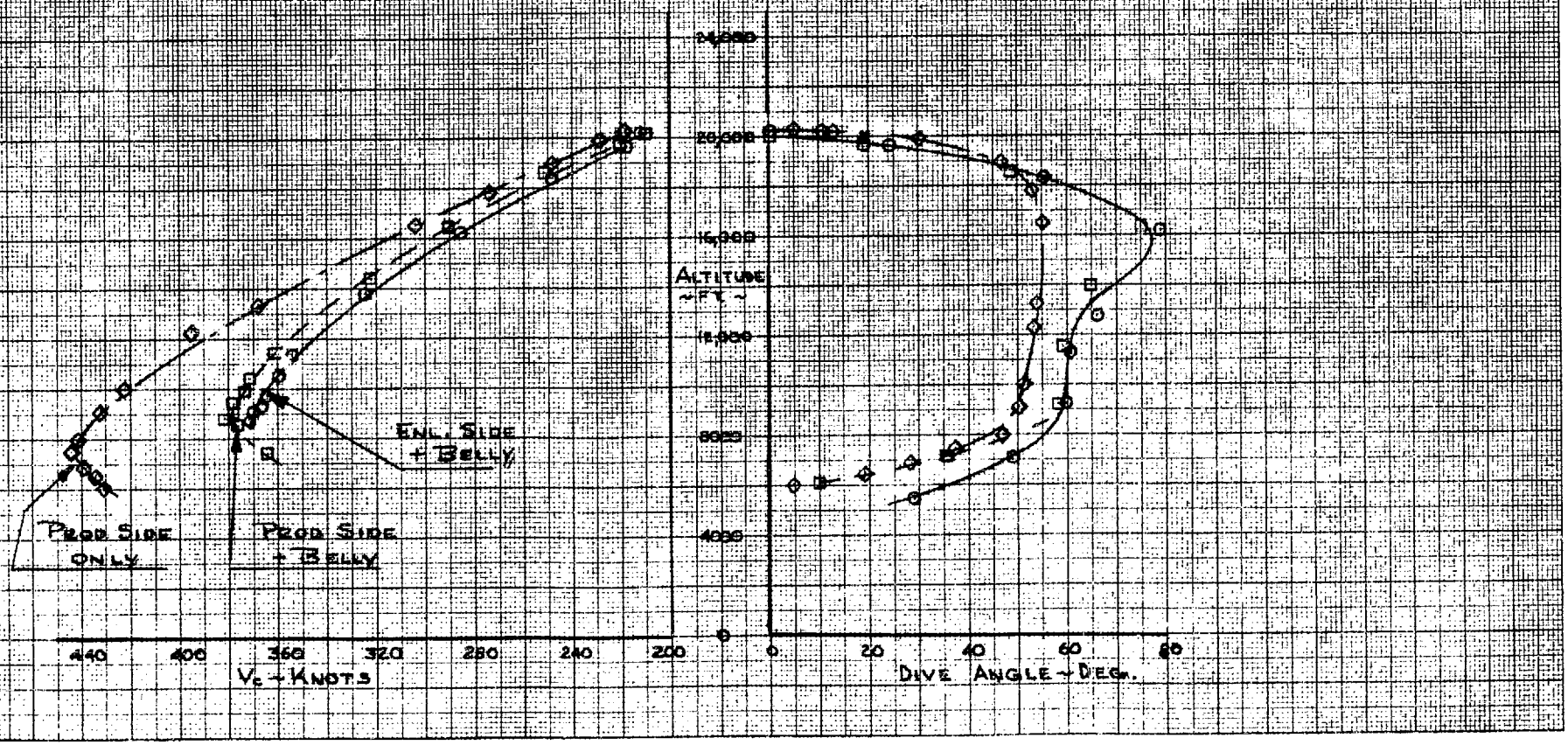
PREPARED BY AES	NORTH AMERICAN AVIATION, INC.	PAGE NO. 12 OF 28
CHECKED BY: RDW		REPORT NO. NA-53-131-19
DATE: 3-5-53		MODEL NO. F-86F

SPEED BRAKE CONFIGURATION COMPARISON FIG 6

2-200 GAL. UNDERWING TANKS + 2-500 LB G.P. BOMBS (T-127 FINS)
F-86F, 60-579

ENTRY AT:
ALTITUDE ~ 20,000 FT.
V_c ~ 210 KNOTS
R.P.M. ~ IDLE

SYM	FLT.	SPEED BRAKE CONFIGURATION
○	549-I	ENL. SIDE + BELLY
□	550-I	PROD. SIDE + BELLY
◇	552-III	PROD. SIDE ONLY



FORM ED-214

PREPARED BY AES	NORTH AMERICAN AVIATION, INC.	PAGE NO. 13 OF 28
CHECKED BY RDW		REPORT NO. NA-53-131-19
DATE: 3-5-53		MODEL NO. F-86F

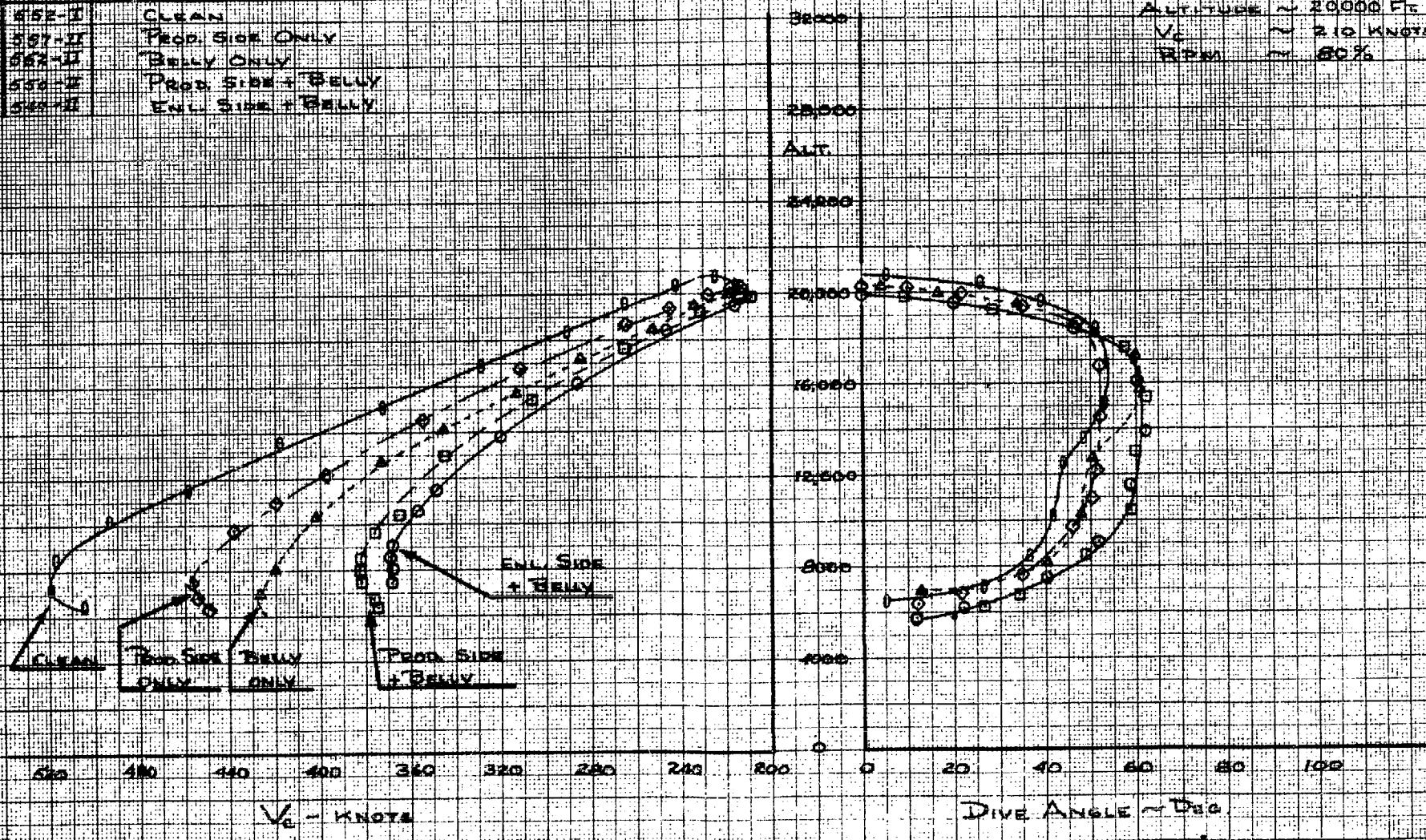
SPEED BRAKE CONFIGURATION COMPARISON

2-200 GAL. UNDERWING TANKS + 2-500 LB. G.P. BOMBS (T-127 FINS)

FIG 7

SYM	FLT.	SPEED BRAKE CONFIGURATION
□	652-I	CLEAN
◇	597-II	PROD. SIDE ONLY
△	647-II	BELLY ONLY
▽	550-II	PROD. SIDE + BELLY
○	548-II	ENGL. SIDE + BELLY

ENTRY AT:
ALTITUDE ~ 20,000 FT.
V_E ~ 210 KNOTS
RPM ~ 80%



PREPARED BY: AES	NORTH AMERICAN AVIATION, INC.	PAGE NO. 14 OF 28
CHECKED BY: RDW		REPORT NO. NA-53-131-19
DATE: 3-5-53		MODEL NO. F-86F

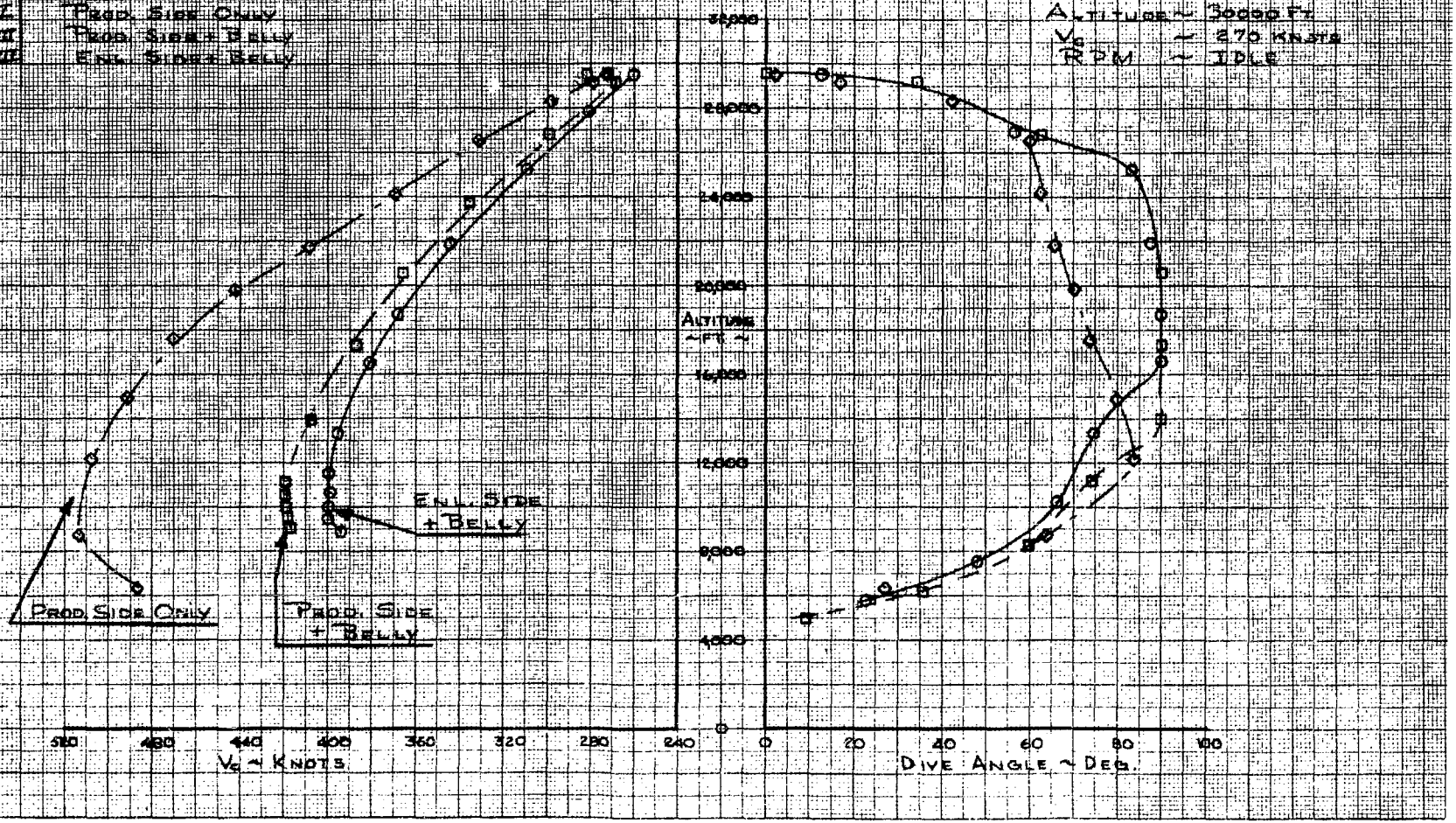
SPEED BRAKE CONFIGURATION COMPARISON

2-200 GAL. UNDERWING TANKS + 2-500 LB G.P. BOMBS (T-127 FINS)
F-86F, 49-371

FIG 8

ENTRY AT:
ALTITUDE ~ 30000 FT.
V_c ~ 270 KNOTS
RPM ~ IDLE

SYM	FLT.	SPEED BRAKE CONFIGURATION
○	537-2	PROD. SIDE ONLY
□	560-11	PROD. SIDE + BELLY
◇	549-11	ENL. SIDES + BELLY



FORM ED-214

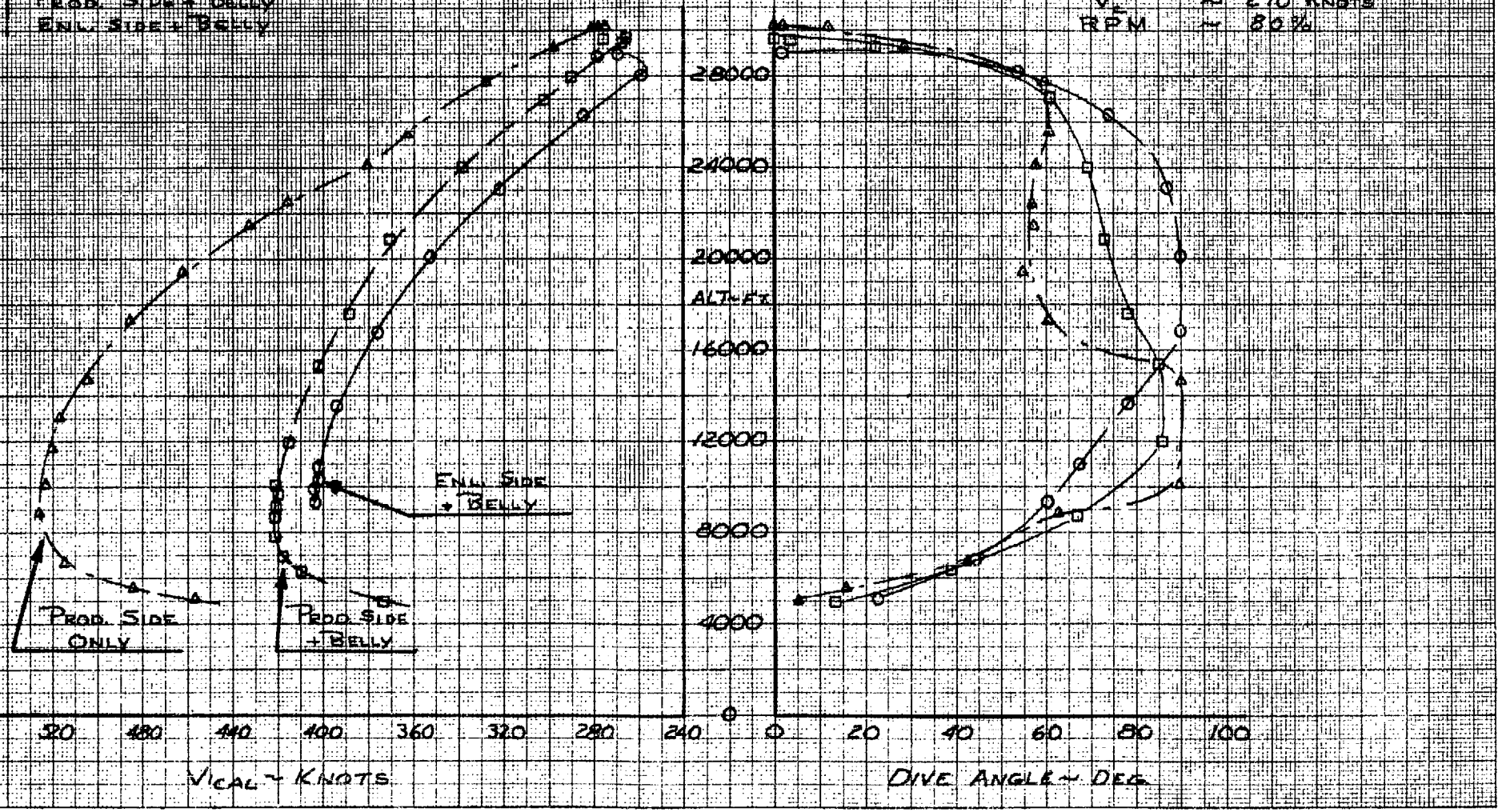
PREPARED BY: AES	NORTH AMERICAN AVIATION, INC.	PAGE NO. 15 OF 28
CHECKED BY: RDW		REPORT NO. NA-53-191-19
DATE: 3-5-53		MODEL NO. F-86F

SPEED BRAKE CONFIGURATION COMPARISON

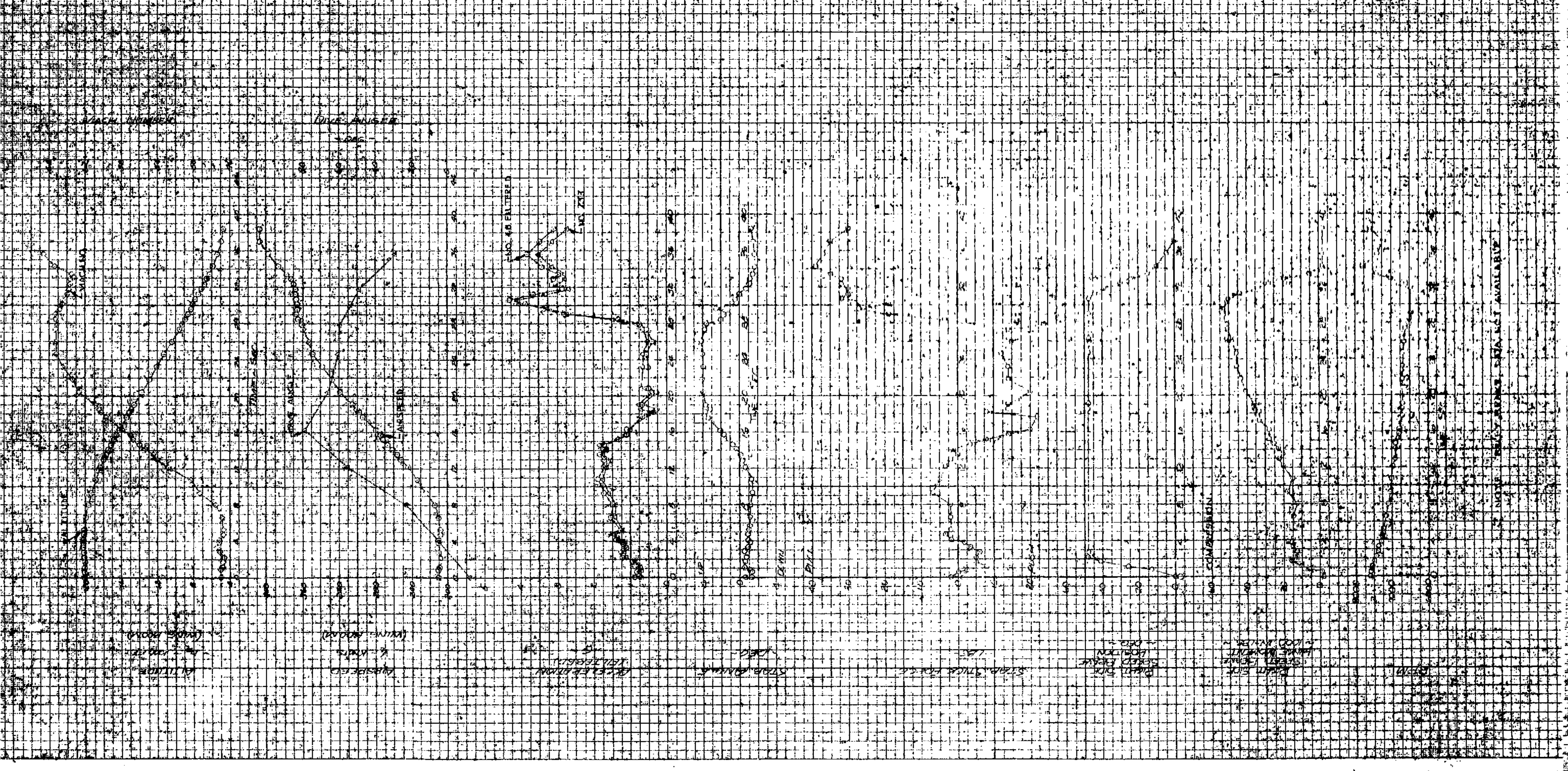
2-200 GAL. UNDERWING TANKS + 2-500 LB. G.P. BOMBS (T-127 ENS)
F-86E, 50-579 FIG 5

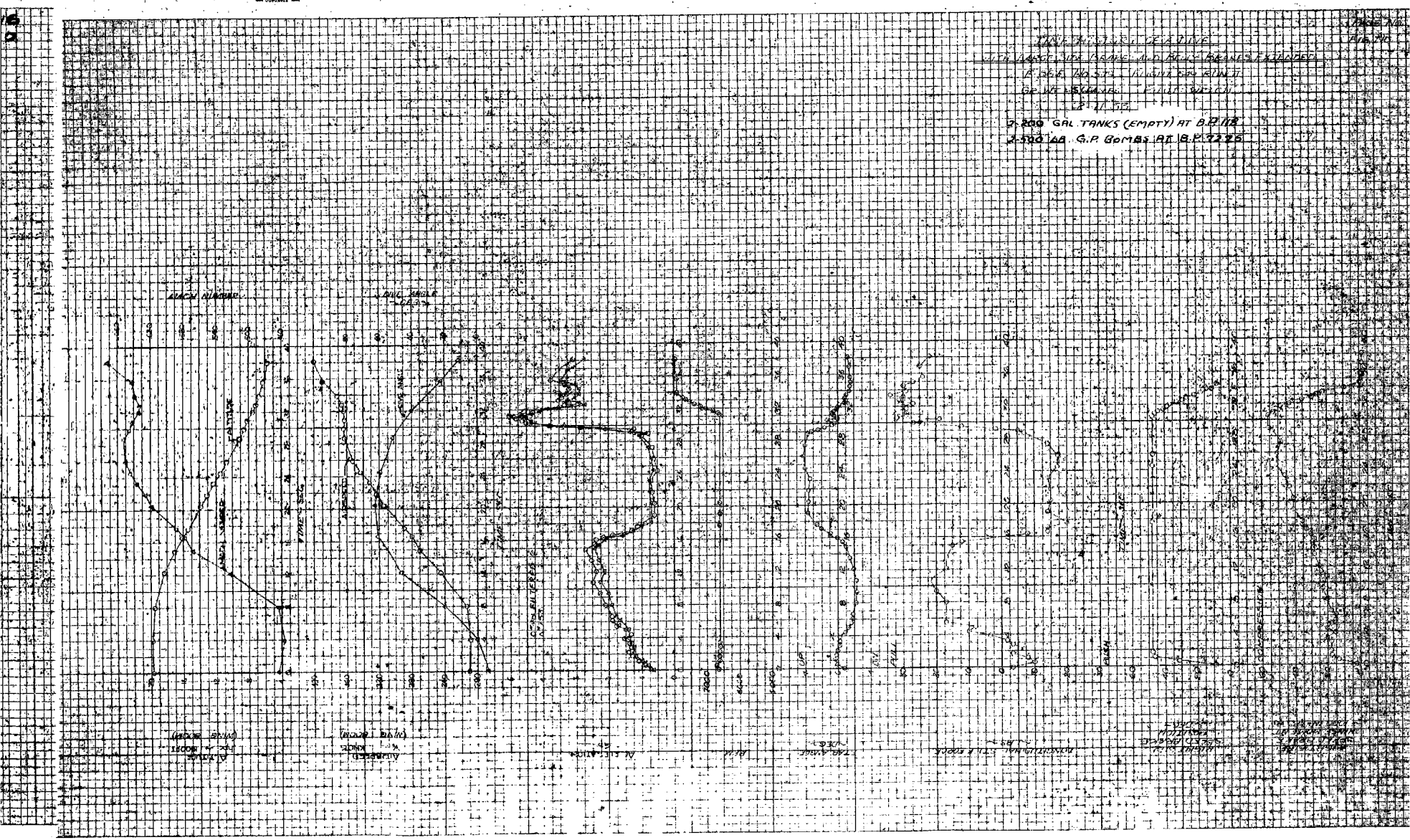
SYM	FLT.	SPEED BRAKE CONFIGURATION
△	555-1	PROD. SIDE ONLY
□	550-R	PROD. SIDE + BELLY
○	549-R	ENL. SIDE + BELLY

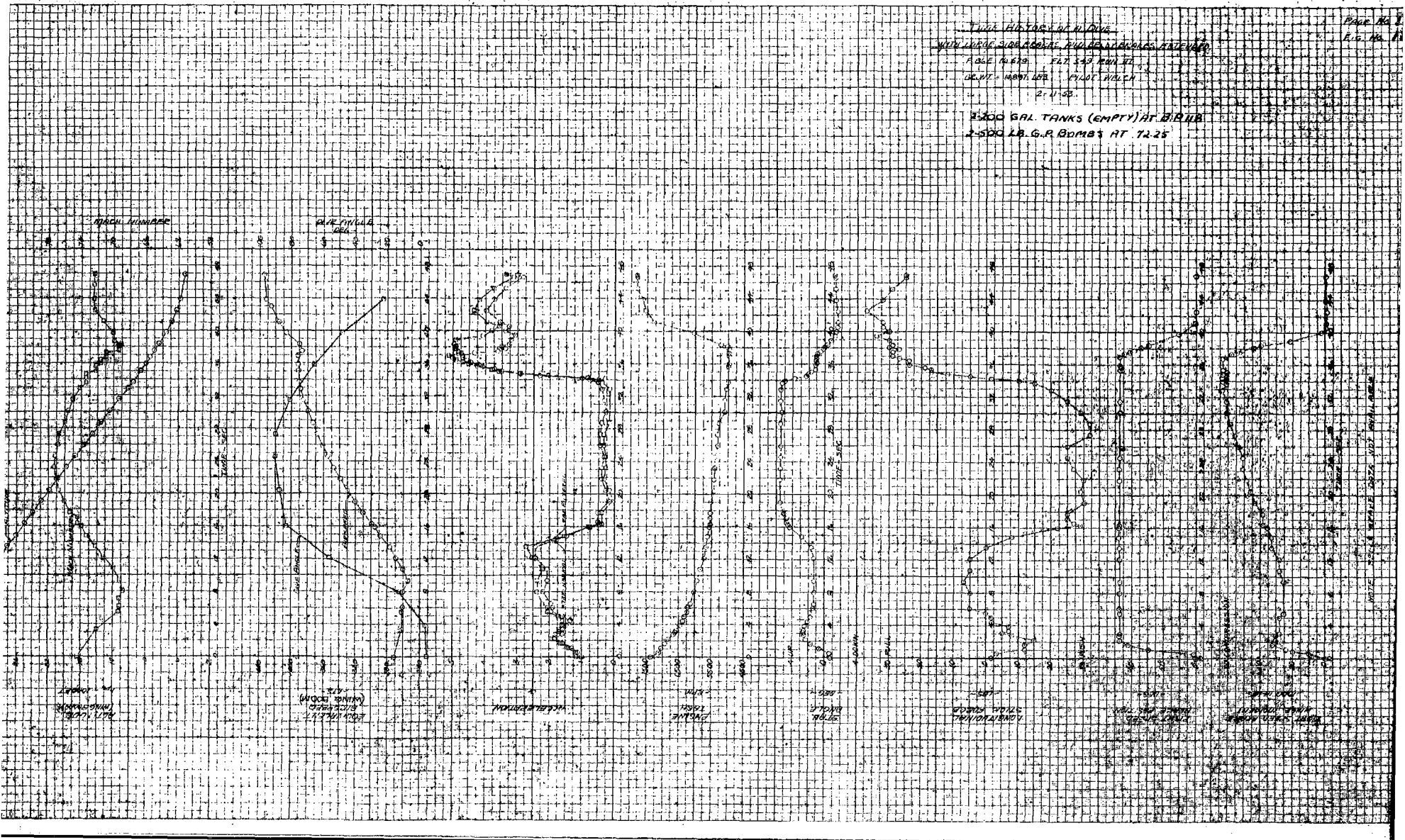
ENTRY ALT.:
ALTITUDE ~ 30000 FT.
V_E ~ 270 KNOTS
RPM ~ 80%

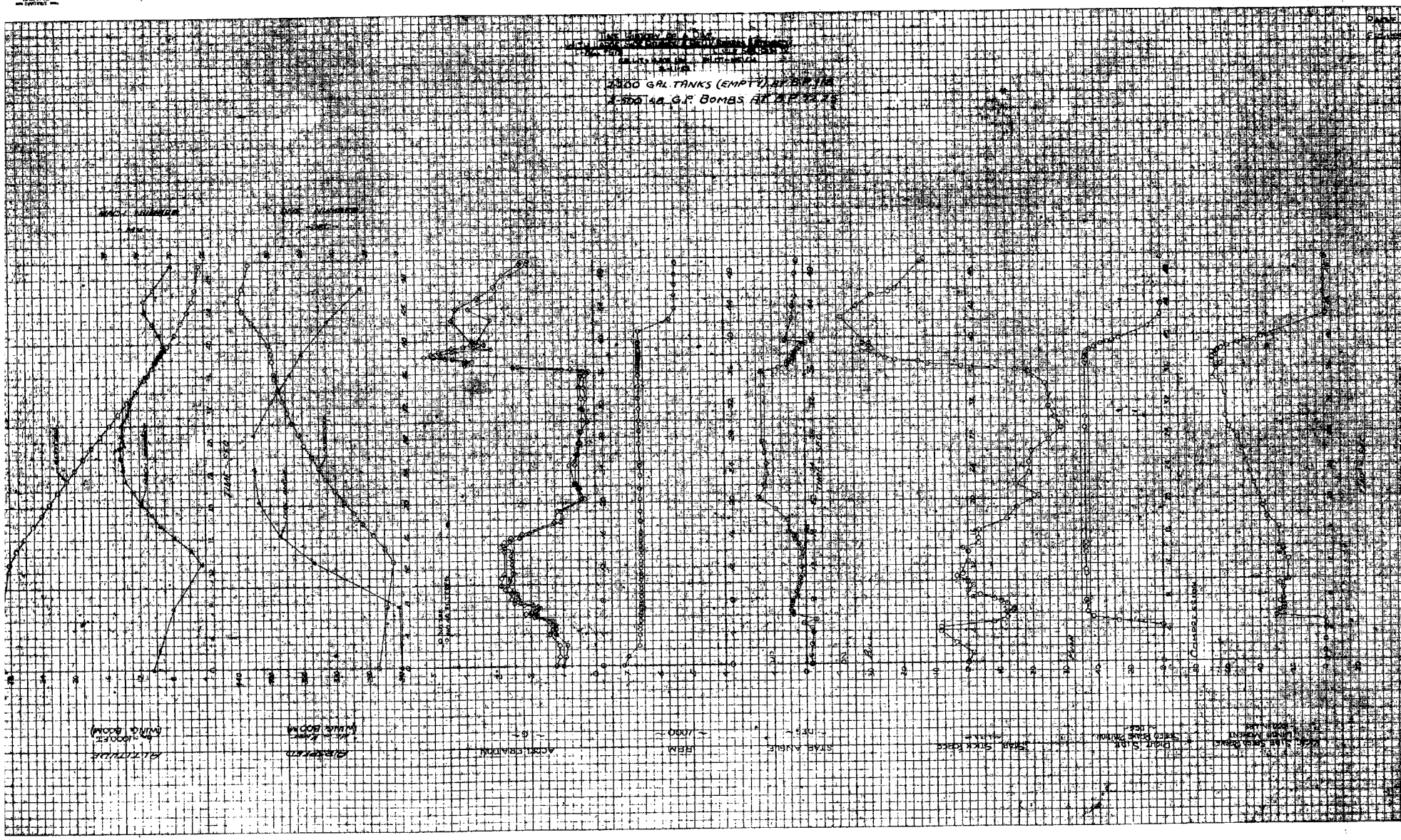


TIME HISTORY OF A DIVE
WITH LARGE SLL BRAKES AND BELLY BRAKES EXTENDED
F86E NO. 519 — FLIGHT 549 CAN I
GR. WT. 16,63[illegible] LBS. PILOT WELCH
2-11-53
2-200 GAL. TANKS (EMPTY) AT B.P.1[illegible]
2-500 LB. G.P. BOMBS AT B.P. 7225









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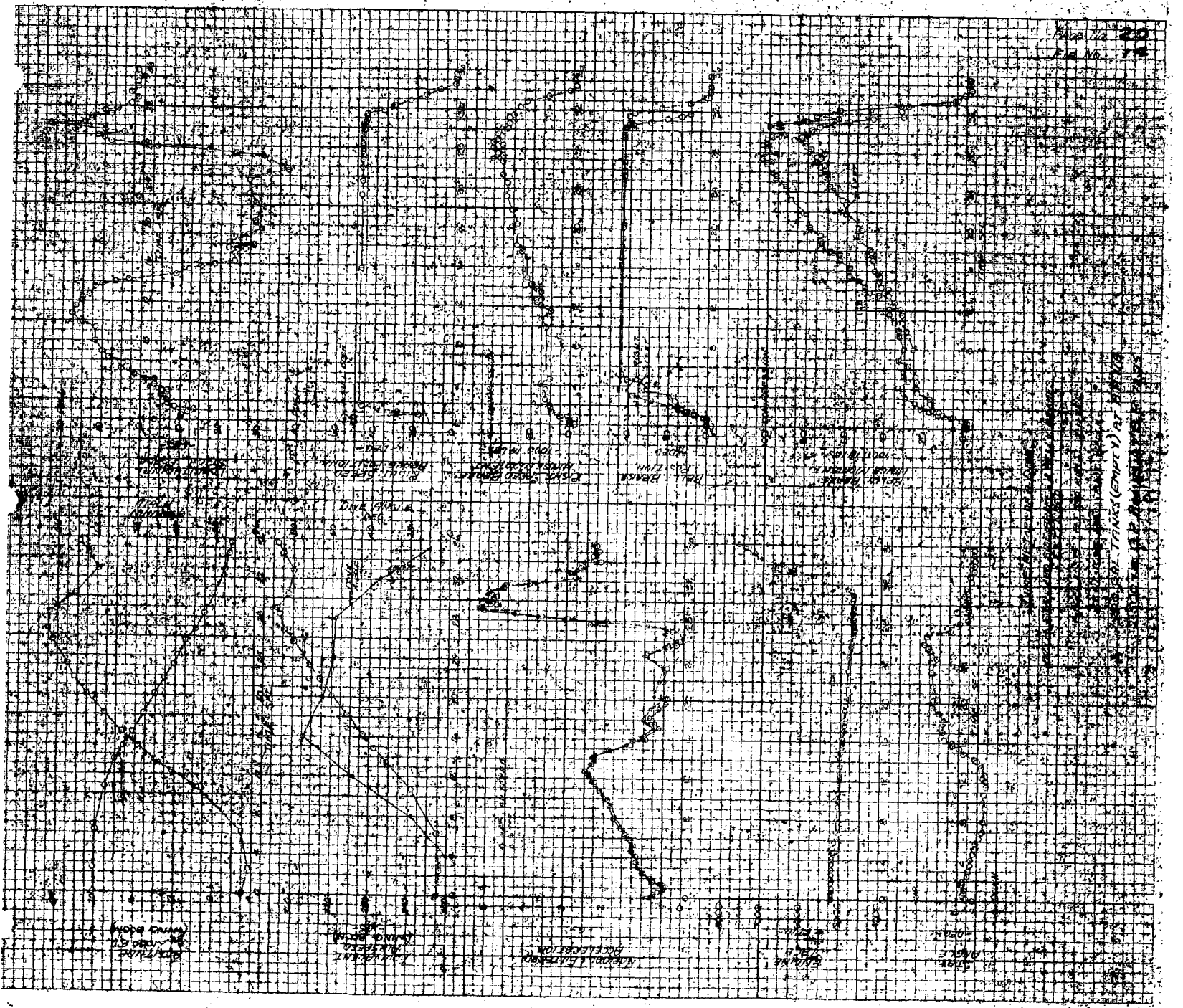

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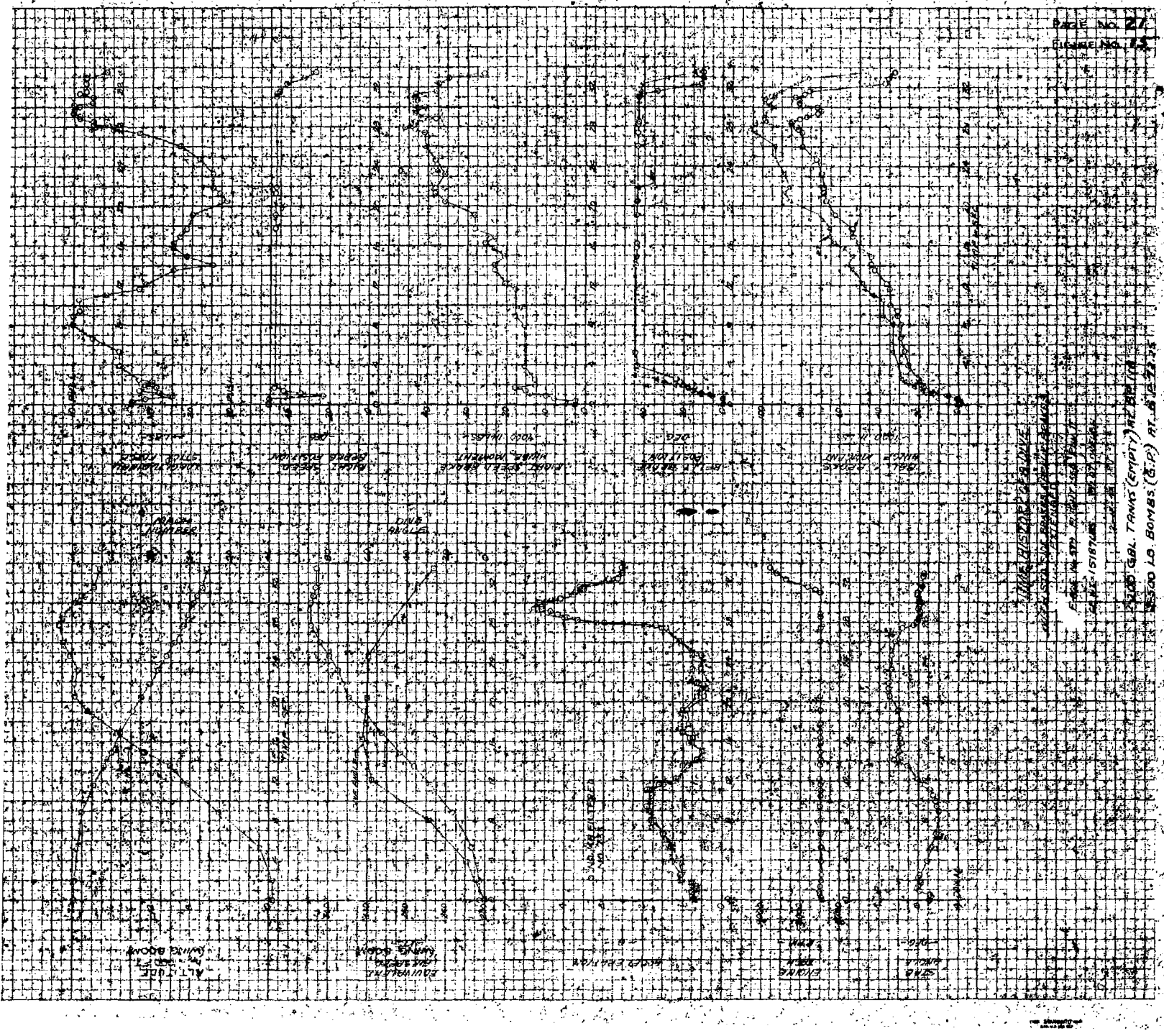

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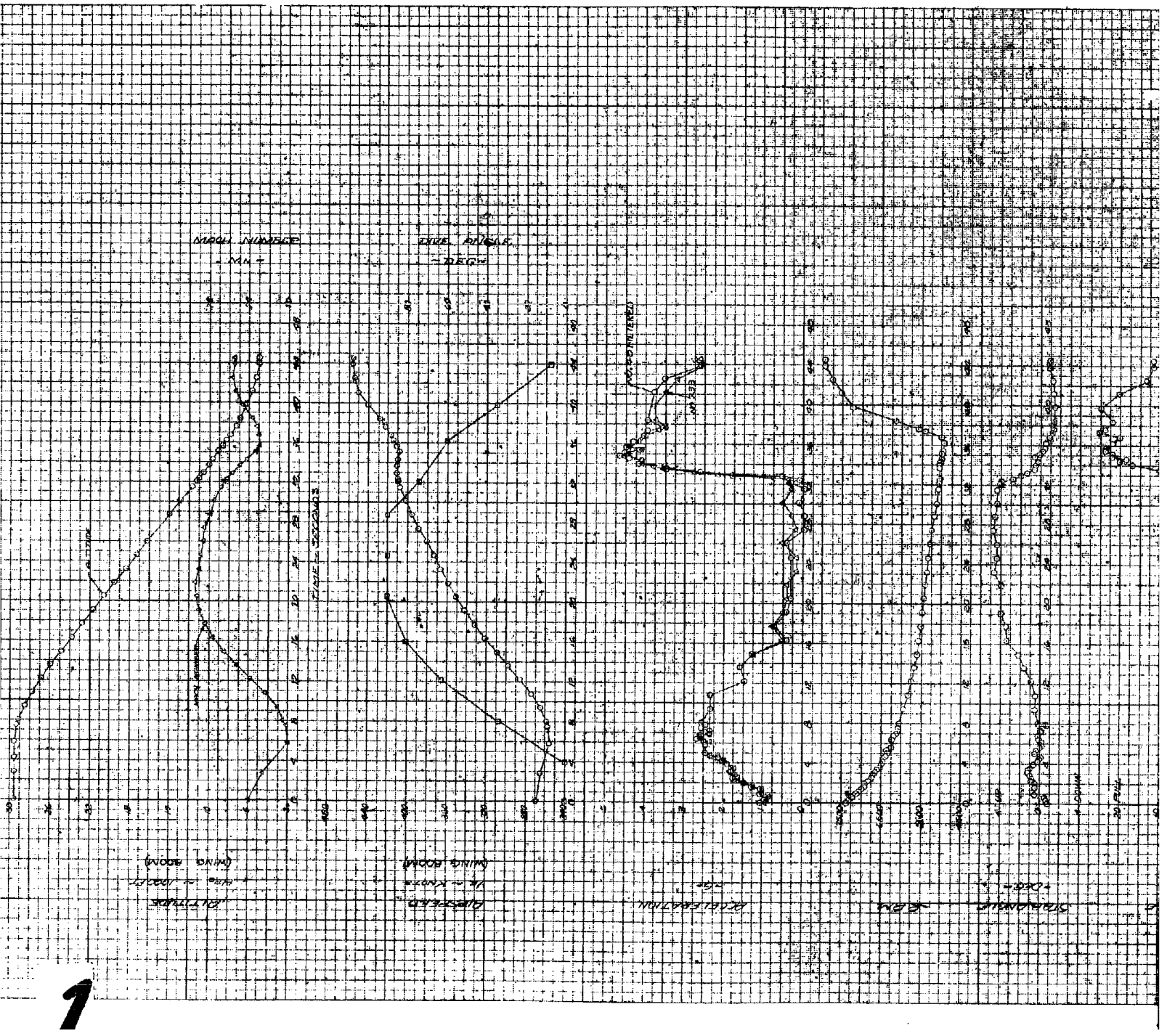

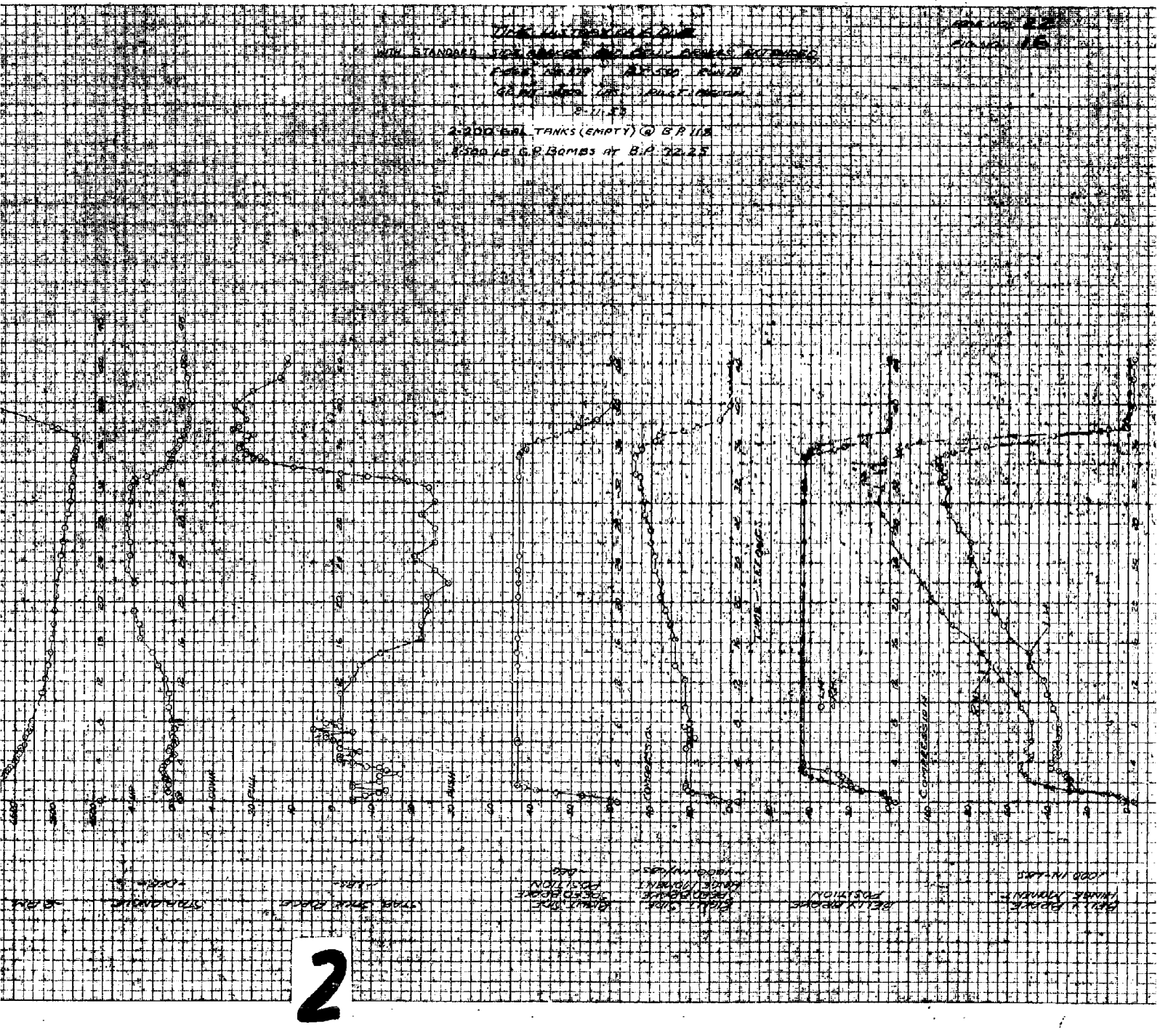

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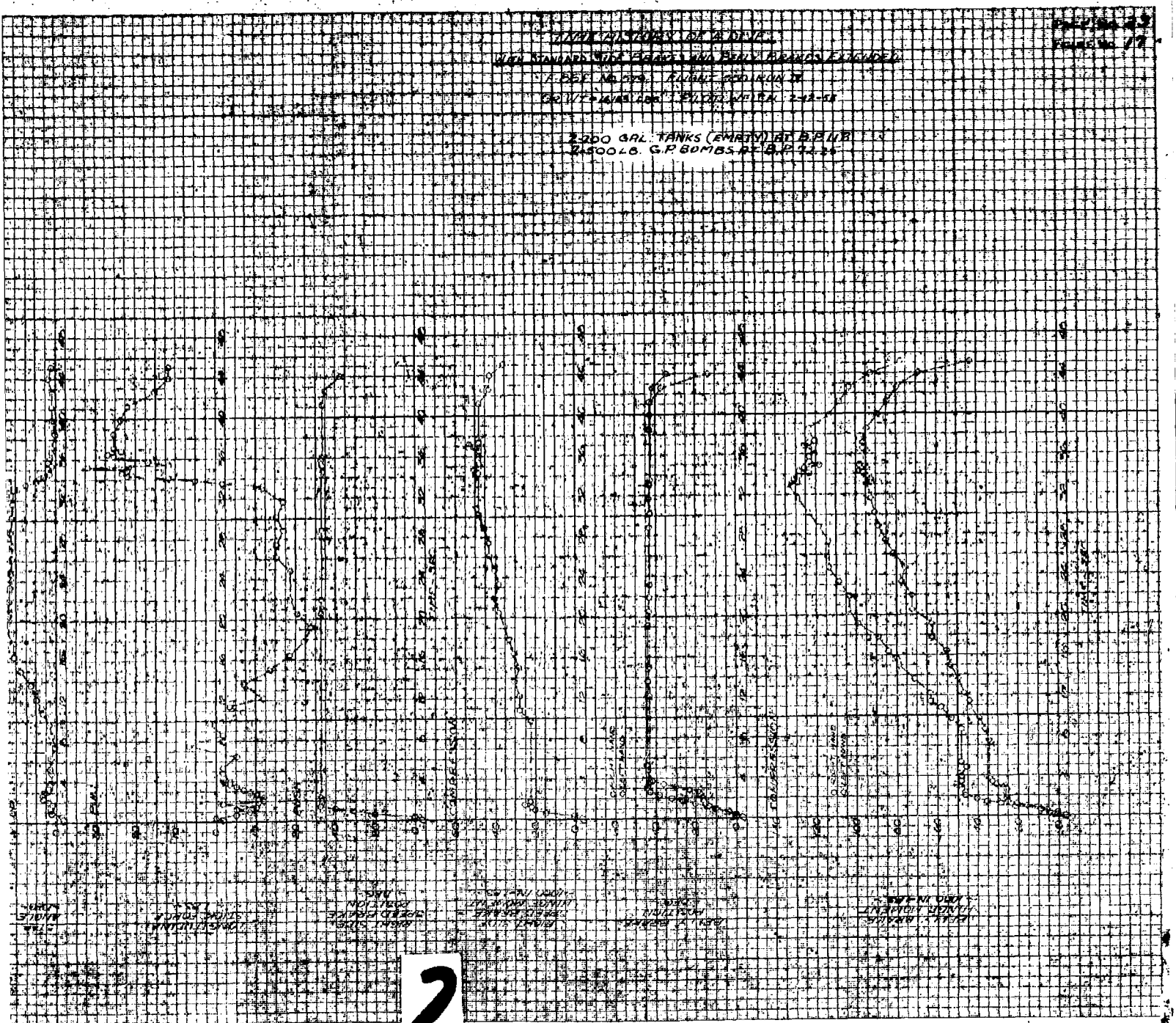

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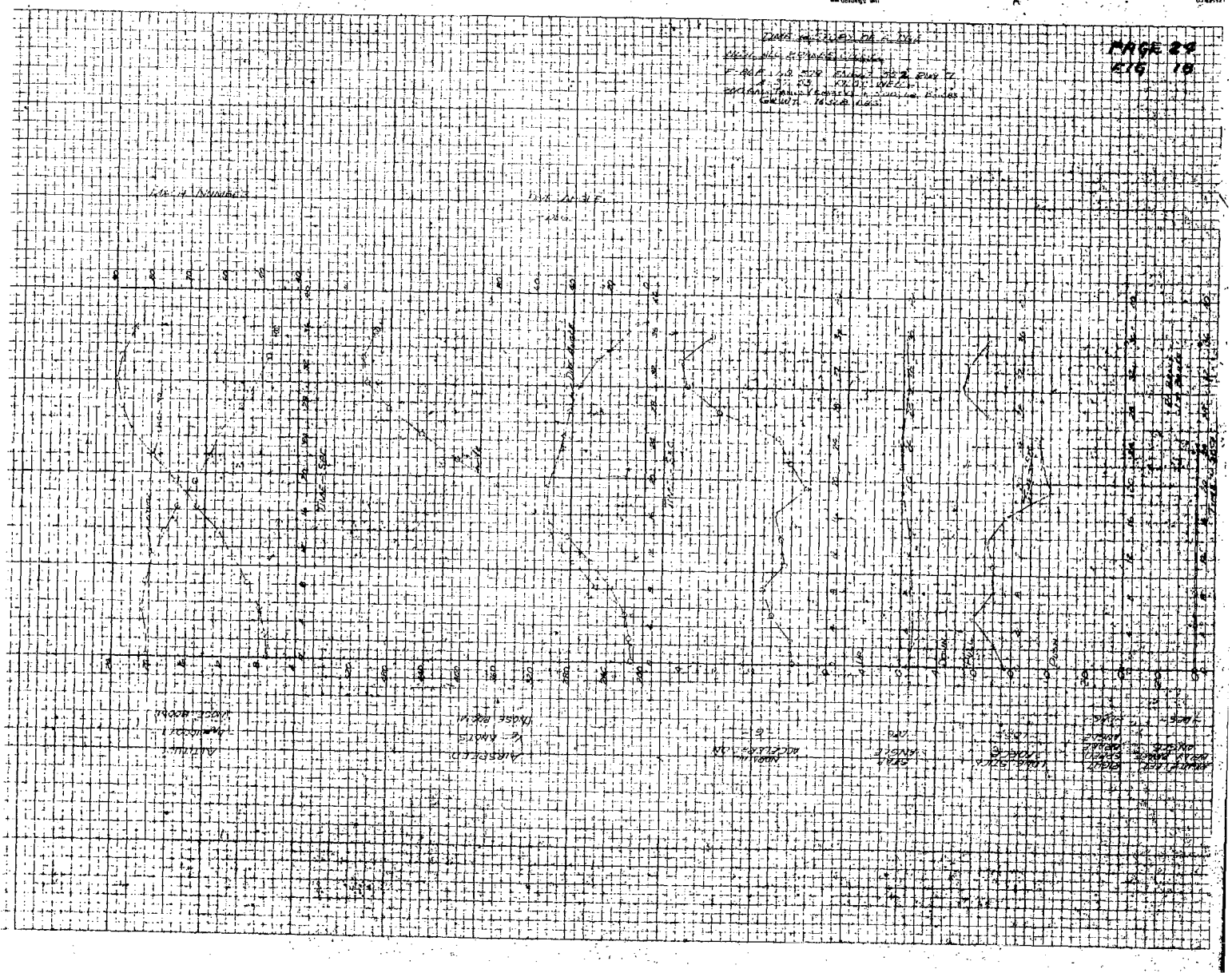

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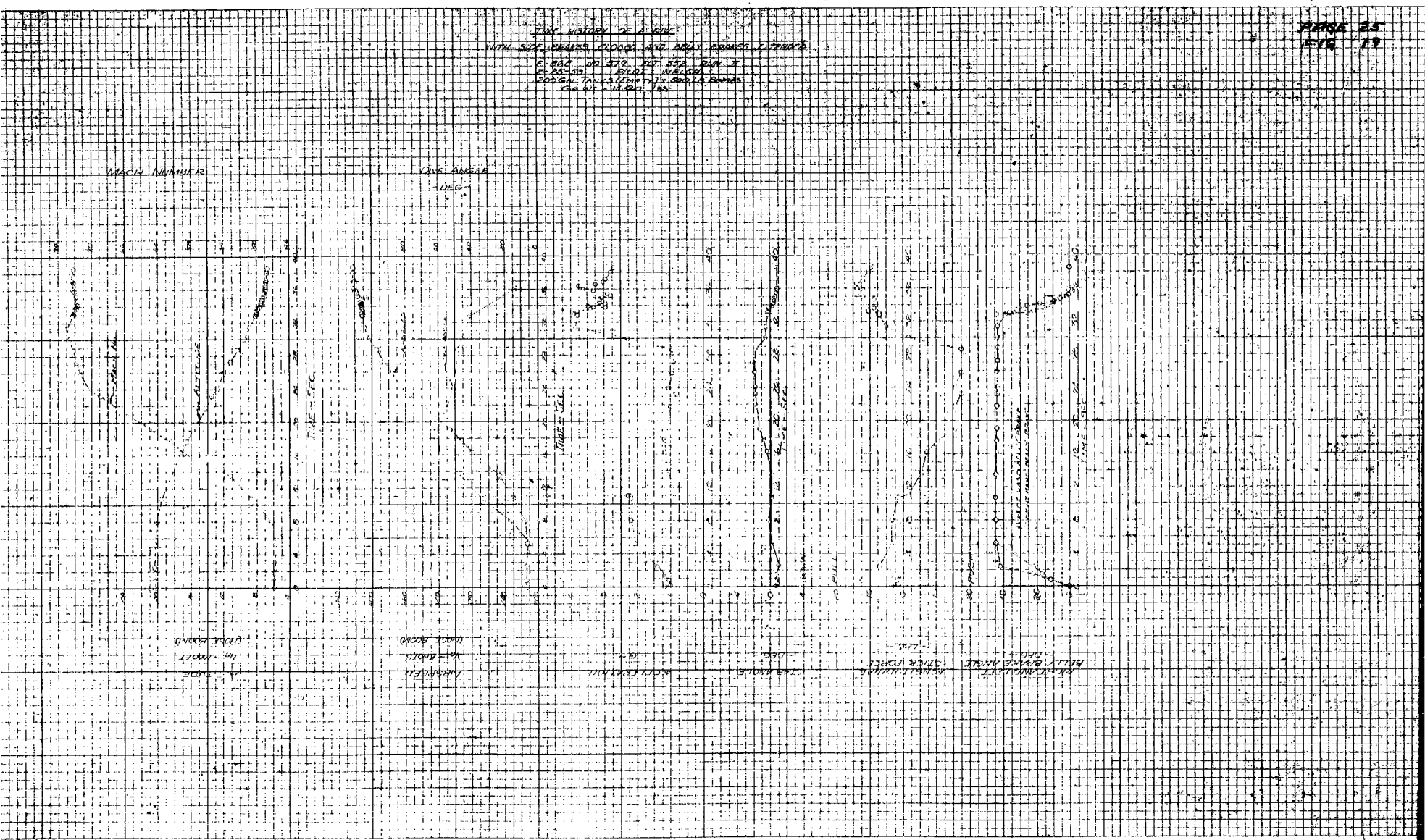

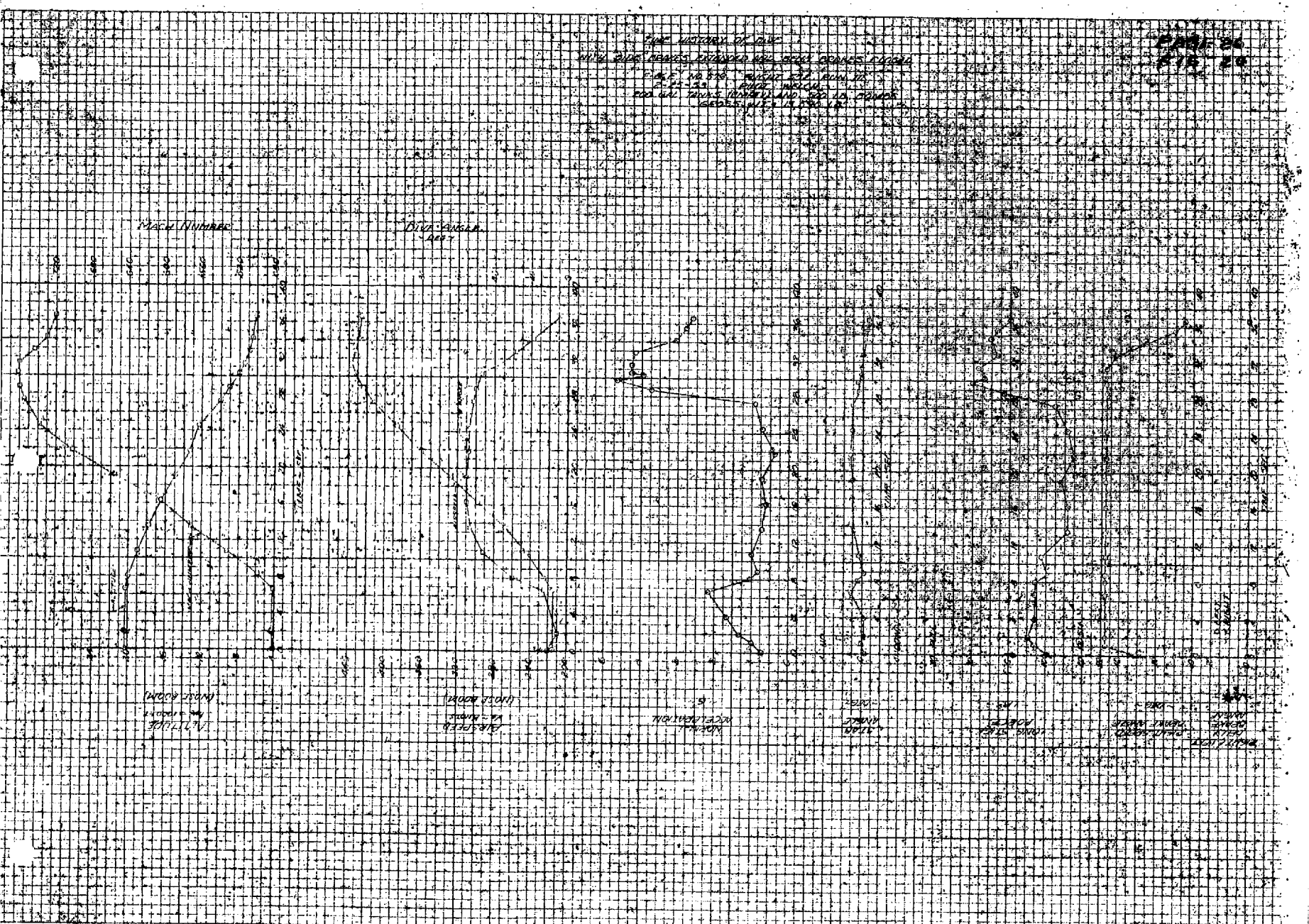

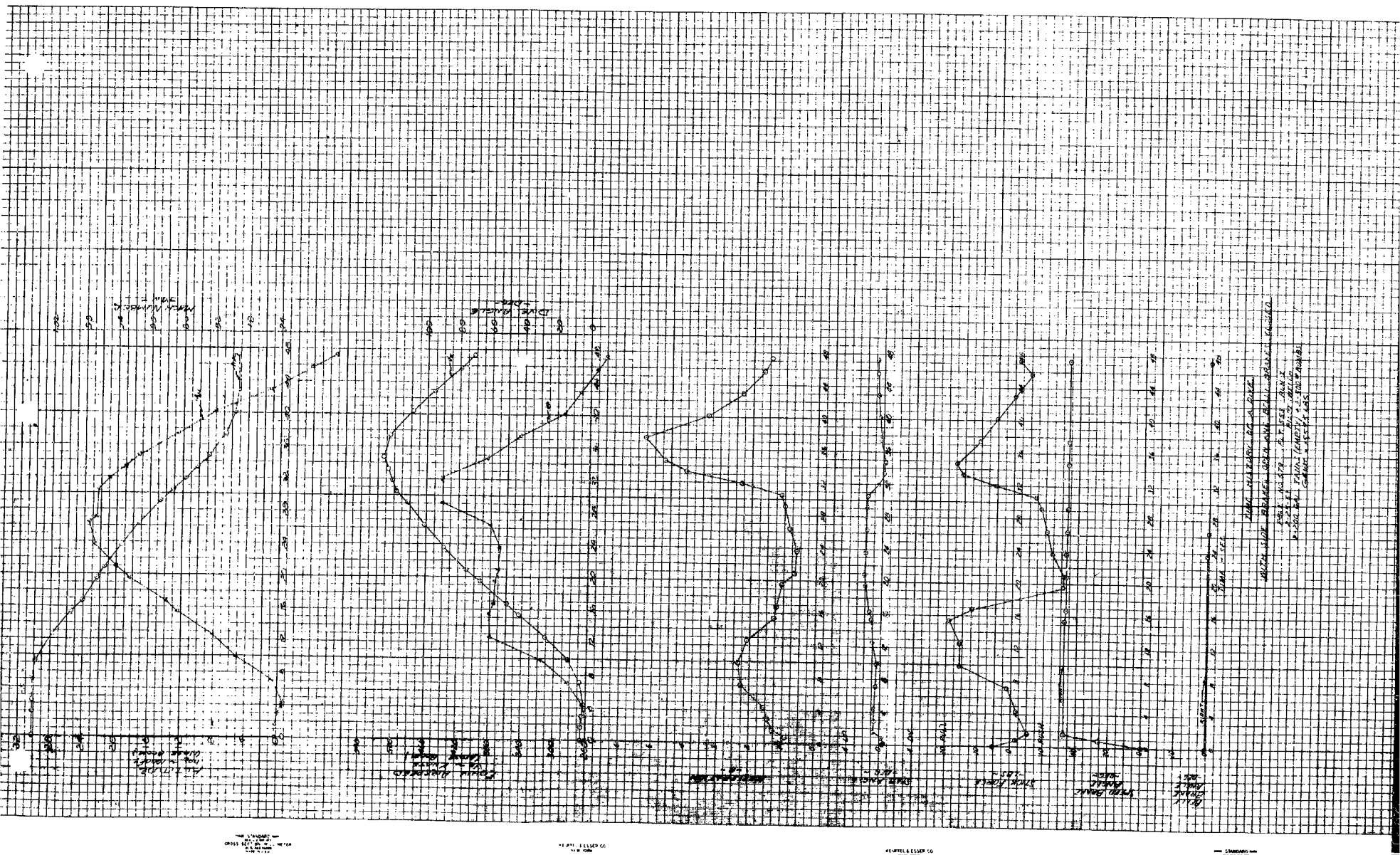

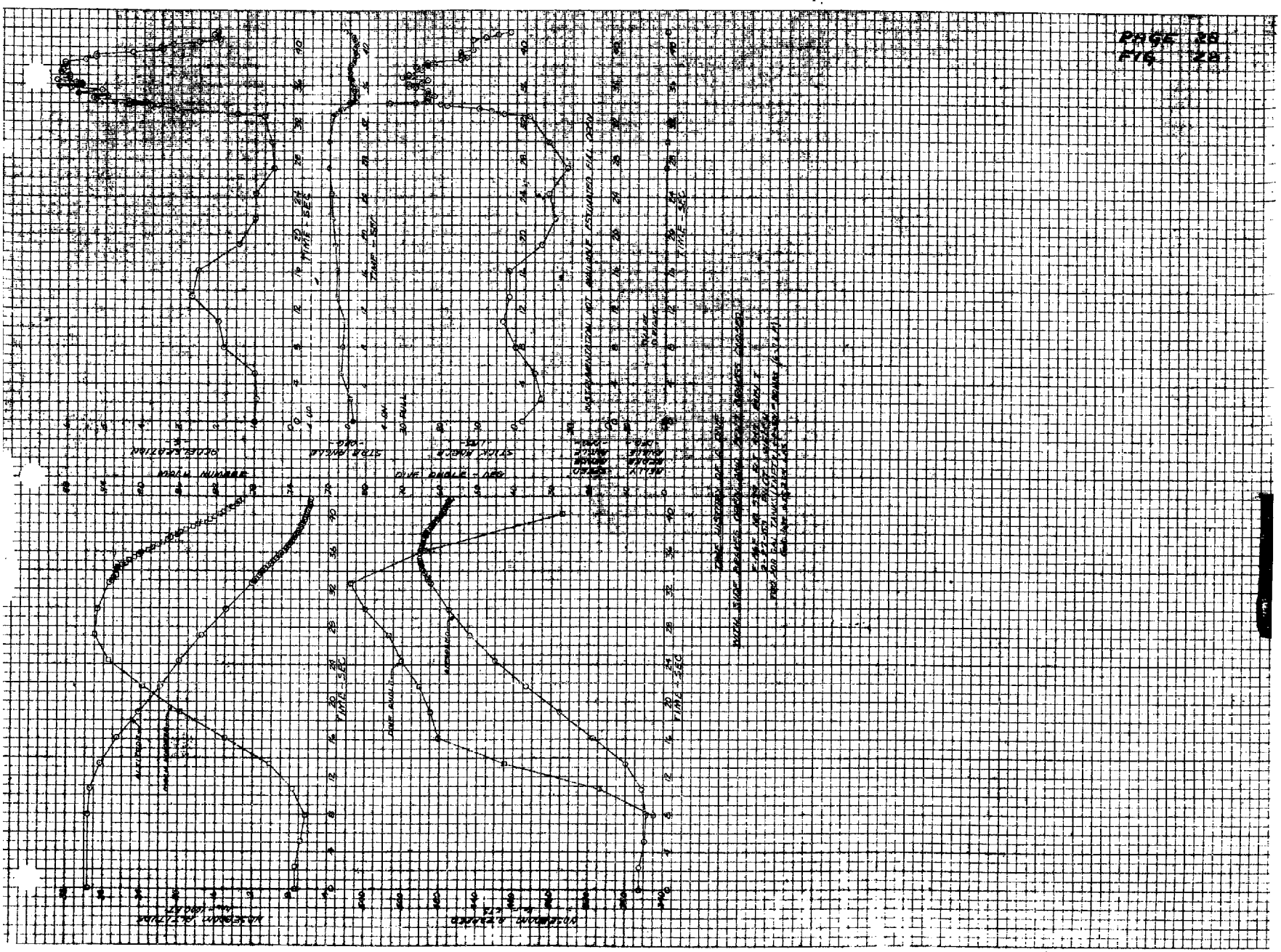

AD-

6806

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE OHIO

FEB 19 2002

MEMORANDUM FOR DTIC/OCQ (ZENA ROGERS)
8725 JOHN J. KINGMAN ROAD, SUITE 0944
FORT BELVOIR VA 22060-6218

FROM: AFMC CSO/SCOC
4225 Logistics Avenue, Room S132
Wright-Patterson AFB OH 45433-5714

SUBJECT: Technical Reports Cleared for Public Release

References: (a) HQ AFMC/PAX Memo, 26 Nov 01, Security and Policy Review, AFMC 01-242 (Atch 1)

(b) HQ AFMC/PAX Memo, 19 Dec 01, Security and Policy Review, AFMC 01-275 (Atch 2)

(c) HQ AFMC/PAX Memo, 17 Jan 02, Security and Policy Review, AFMC 02-005 (Atch 3)

1. Technical reports submitted in the attached references listed above are cleared for public release in accordance with AFI 35-101, 26 Jul 01, *Public Affairs Policies and Procedures*, Chapter 15 (Cases AFMC 01-242, AFMC 01-275, & AFMC 02-005).

2. Please direct further questions to Lezora U. Nobles, AFMC CSO/SCOC, DSN 787-8583.

Lezora U. Nobles

LEZORA U. NOBLES
AFMC STINFO Assistant
Directorate of Communications and Information

Attachments:
1. HQ AFMC/PAX Memo, 26 Nov 01
2. HQ AFMC/PAX Memo, 19 Dec 01
3. HQ AFMC/PAX Memo, 17 Jan 02

cc:
HQ AFMC/HO (Dr. William Elliott)

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE OHIO

DEC 19 2001

MEMORANDUM FOR HQ AFMC/HO

FROM: HQ AFMC/PAX

SUBJECT: Security and Policy Review, AFMC 01-275

1. The reports listed in your attached letter were submitted for security and policy review IAW AFI 35-101, Chapter 15. They have been cleared for public release.

2. If you have any questions, please call me at 77828. Thanks.

JAMES A. MORROW
Security and Policy Review
Office of Public Affairs

Attachment:
Your Ltr 18 November 2001

18 December 2001

MEMORANDUM FOR: HQ AFMC/PAX
Attn: Jim Morrow

FROM: HQ AFMC/HO

SUBJECT: Releasability Reviews

1. Please conduct public releasability reviews for the following attached Defense Technical Information Center (DTIC) reports:

   a. *Emergency Fuel Selector Valve Test on the J47-GE-27 Engine as Installed on F-86F Aircraft*, January 1955; DTIC No. AD- 056 013.

   b. *Phase II Performance and Serviceability Tests of the F-86F Airplane USAF No. 51-13506 with Pre-Turbine Modifications*, June 1954; DTIC No. AD- 037 710.

   c. *J-47 Jet Engine Compressor Failures*, 7 April 1952; DTIC No. AD- 039 818.

   d. *Evaluation of Aircraft Armament Installation (F-86F with 206 RK Guns) Project Gun-Val*, February 1955; DTIC No. AD- 056 763.

   e. *A Study of Serviced-Imposed Maneuvers of Four Jet Fighter Airplanes in Relation to Their Handling Qualities and Calculated Dynamic Characteristics*, 15 August 1955; DTIC No. AD- 068 899.

   f. *Fuel Booster Pump*, 6 February 1953; DTIC No. AD- 007 226.

   g. *Flight Investigation of Stability Fix for F-86F Aircraft*, 8 September 1953; DTIC No. AD- 032 259.

   h. *Investigation of Engine Operational Deficiencies in the F-86F Airplane*, June 1953; DTIC No. AD- 015 749.

   i. *Operational Suitability Test of the T-160 20mm Gun Installation in F-86F-2 Aircraft*, 29 April 1954; DTIC No. AD- 031 528.

   j. *Engineering Evaluation of Type T 160 Gun and Installation in F 86 Aircraft*, September 1953; DTIC No. AD- 019 809.

k. *Airplane and Engine Responses to Abrupt Throttle Steps as Determined from Flight Tests of Eight Jet-Propelled Airplanes*, September 1959; DTIC No. AD-225 780.

l. *Improved F-86F: Combat Developed*, 28 January 1953; DTIC No. AD- 003 153.

m. *Flight Test Progress Report No. 19 for Week Ending February 27, 1953 for Model F-86F Airplane NAA Model No. NA-191*, 5 March 1953; DTIC No. AD-006 806.

2. These attachments have been requested by Dr. Kenneth P. Werrell, a private researcher.

3. The AFMC/HO point of contact for these reviews is Dr. William Elliott, who may be reached at extension 77476.

JOHN D. WEBER
Command Historian

13 Attachments:
a. DTIC No. AD- 056 013
b. DTIC No. AD- 037 710
c. DTIC No. AD- 039 818
d. DTIC No. AD- 056 763
e. DTIC No. AD- 068 899
f. DTIC No. AD- 007 226
g. DTIC No. AD- 032 259
h. DTIC No. AD- 015 749
i. DTIC No. AD- 031 528
j. DTIC No. AD- 019 809
k. DTIC No. AD- 225 780
l. DTIC No. AD- 003 153
m. DTIC No. AD- 006 806